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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,789	06/28/2001	Hyo-Jin Kim	053785-5022	9633

9629 7590 10/22/2002

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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 10/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/892,789

Applicant(s)

KIM, HYO-JIN

Examiner

Jeanne A. Di Grazio

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Priority*

Applicant claims foreign priority to Korean Patent Application No. 2000-51876 (September 02, 2000).

### *Specification*

Please note spelling and or grammar corrections to the specification.

### *Claim Objections*

Claims 15 and 16 are objected to because of the following informality: Per claim 15: please insert an appropriate word between "disposed" and "one." Per claims 15 and 16: a period (.) is missing at the end of the claim. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Won et al. (USPN 6,330,148) in view of Takahashi et al. (USPN 5,889,572) in further view of Summers et al. (USPN 5,909,359).

Per claims 1-14: These claims are summarized as follows: A first frame on which a first printed circuit board (PCB1) and a second printed circuit board (PCB2) are formed; first and second frames coupled with the liquid crystal panel (LCP) therebetween; PCB1 is electrically connected with the LCP, PCB2 is electrically connected with PCB1 to drive the LCP, PCB2 is removable from PCB1 and the first frame. First frame has first and second coupling segments to hold opposite sides of PCB2. PCB2 has at least one notch on its side. PCB2 has at least one notch on the opposite side thereof. Each first and second coupling segments has the shape of a

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hook or capsized letter "L." A number of first and second coupling segments are the same. A first distance between two adjacent first coupling segments is smaller than a corresponding side length of PCB2 and a second distance between the two adjacent second coupling segments is the same as the first distance. A flexible printed circuit board (FPCB) electrically connects PCB1 with PCB2. FPCB is removable from PCB2. A tape carrier package (TCP) electrically connects PCB1 with the LCP. A back light is included having a lamp. A lower cover supports the first frame to prevent wrinkling and bending of the first frame, the lower cover is coupled to the lower frame at an opposite side to the lower frame opposite to (or at the side of) the lamp.

1. Discussion: Won et al. teaches an assembly of a flat panel display module wherein, in one embodiment, a printed circuit board is supported on a frame. Won et al. does not appear to have two printed circuit boards; however, Won et al. does have a printed circuit board on a frame and a liquid crystal panel between two frames, one of which comprises the printed circuit board [Refer to Fig. 7]. Furthermore, Won et al. also has a liquid crystal display panel connected electrically with a printed circuit board and a drive circuit board through a tape carrier package [Refer to Col. 5, Lines 27-32]. Won et al. also discloses a backlight unit. Won et al. may also include a lower cover support to a frame coupled to the lower frame at a side opposite that of or at the side of the backlight unit.
2. Won et al. does not appear to have two printed circuit boards; however, Takahashi et al. does have at least two printed circuit boards that are electrically connected to each other and a liquid crystal display panel via an interconnect board [Col. 1, Lines 62-67]. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify Takahashi et al. in view of Won et al. to incorporate at least two printed circuit boards on the frame as disclosed in Won et al. for design and or manufacturing reasons because the structure disclosed in Won et al. is capable of incorporating at least one printed circuit board and is not limited as such.
3. The coupling segments in Won et al. that hold the frame upon which the printed circuit board is mounted are brackets [Refer to Col. 4, Lines 44-47]. Brackets generally have a hook shape or an inverted "L" shape." The bracket is disclosed as having said shapes [Refer to Fig. 5B]. Figure 6 of Won et al. discloses at least two

identical brackets equidistant from each other and having a distance between them larger than the distance from corner edges to each bracket.

4. In Won et al., the printed circuit board is not shown; however, that a printed circuit board may have notches is a matter of choice in the industry for manufacturing purposes and for connection purposes.
5. Won et al. does not appear to have a removable printed circuit board from a frame, printed circuit board, or flexible circuit board; however, Summers et al. does have an apparatus whereby a printed circuit board can be easily removed. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have a printed circuit board that could easily be removed from a structure so that a board could be readily replaced in time of upgrades.

Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Won et al. (USPN 6,330,148 B1).

Per claims 15-20 (summarized): A backlight disposed [insert word] one of the upper and lower substrates; and at least one PCB, wherein driving circuitry is disposed on the PCB. The at least one PCB is divided into a source and control PCB. The source PCB and control PCB are electrically interconnected via a printed circuit and a connector. The printed circuit is flexible. The control PCB includes a plurality of notches. The plurality of notches are disposed on opposing sides of the control PCB.

1. Discussion: Won et al. has a backlight and at least one printed circuit board as noted previously. By definition, a printed circuit board has driving circuitry disposed on it.
2. Won et al. does not appear to have a printed circuit board divided into a source and control printed circuit board; however, given the current ease with which printed circuit boards can be made and the ever-present need to reduce the number of parts in manufacturing, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have a

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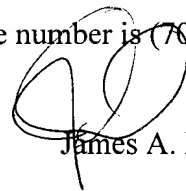
single printed circuit board and divide it into other circuit boards. This would reduce the number of printed circuit boards and also reduce the weight, size, and thickness of the display system. Such control and source printed circuit boards would most likely be interconnected electrically. Printed circuits, moreover, are often flexible. That notches would be disposed on the printed circuit board (control PCB) would be a matter of industry choice for manufacturing reasons.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (703)305-7009. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Sikes can be reached on (703)308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-8741 for regular communications and (703)746-8741 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Jeanne Andrea Di Grazio



James A. Dudek, Primary Examiner

JDG

October 16, 2002